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M-8040.1
Appendix 4

FAA-04-18648-3

Aircraft Certification Service
AD PROPOSAL WORKSHEET

DOCKET NUMBER: 04ne26

TECH WRITER:

PROPOSED ACTION:

_____ Telegraphic AD
_____ Priority Letter
__X__ Immediately Adopted AD
_____ Federal Register version of Telegraphic AD or Priority Letter
_____ Final Rule after NPRM *(*See Note on next page)*
_____ Notice of Proposed Rulemaking
_____ Other ____

Is this proposed action one of the following? *(Check if applicable)*:

_____ Supercedure of an AD____ Revision of an AD_____ Supplemental NPRM

1. Product Manufacturer.

General Electric Company

2. Applies to (models, serial numbers or references, installations, part numbers, as applicable).

General Electric Company CF34-3A1 and CF34-3B1 series turbofan engines, installed on, but not limited to Bombardier series Regional Jet Model CL-600-2B19 (Regional Jet series 100 and 440) containing certain serial numbered Low Pressure Turbine (LPT) Stage 5 disk part number (P/N) 6078T92P01 or certain serial numbered LPT Stage 6 disk P/N 6078T89P01.

3. ACO project engineer.

Name/Title/Branch: Robert Grant, Aerospace Engineer, ANE-141

Telephone: 781-238-7757

Fax: 781 238-7199

4. Directorate Project Officer (if applicable) and title.

Name/Title/Branch: Dorina Mihail, Aerospace Engineer, ANE-110

Telephone: 781 238-7153

Fax: 781 238-7199

5. If this action is a Final Rule after NPRM, list the docket number and the number of public comments received. Fill out the "AD Proposal Worksheet Attachment: Disposition of Comments."

Docket No.:

Number of comments received:

NOTE: For Final Rules after NPRM, if any of the following requested information (in Questions 6 through 23) is unchanged from the NPRM, you may so indicate this in the space provided, rather than repeat the information.)

6a. Describe the **unsafe condition**.

This AD results from a Stage 5 LPT disk low cycle fatigue (LCF) failure during factory testing. This action requires inspections or replacement of certain LPT disks for electrical arc-out indications. Repetitive inspections are also mandated. The actions of this AD are intended to prevent rupture of an LPT disk due to cracks that initiate at an electric arc-out, which could result in an uncontained failure of the engine.

6b. Describe the **cause** of the unsafe condition.

Metallurgical evaluation of the failed disk showed the fatigue origin of the failed LPT stage 5 disk was an arc-out site. The arc-out was created by inadvertent contact of the electrical probes to the LPT disk during the electrochemical etching procedure to match mark components at assembly. The defect is being referred to as electrical arc-out. This condition, if not corrected, could result in rupture of the LPT disk due to cracks that initiate at an electrical arc-out, which could result in an uncontained failure of the engine.

6c. Describe the occurrences that **prompted** this proposed AD action.

In February 2004, the FAA became aware of the LPT stage 5 disk failure.

6d. How many such occurrences have been reported?

1

6e. On what date did the FAA become aware of the situation?

February 2004.

7. Was this proposed action prompted by a manufacturer's quality control (QC) problem? If so, is a reporting requirement needed in the AD to determine the scope of the problem? *(If yes to either of these questions, coordinate with cognizant MIDO.)*

No.

8. Was this proposed action prompted by the use of suspected unapproved parts (SUP)?

No.

9. Is this action related to an NTSB safety recommendation? If yes, attach a copy of that recommendation and the FAA response.

No.

10. If this proposed action will revise, supersede, or withdraw an existing AD, please provide the following information about the existing AD.

Amendment No.:

Docket No.:

Federal Register Citation:

11a. What are the proposed types of corrective actions (i.e., one-time inspections, recurring inspections, terminating actions, modifications, operational restrictions, etc.) ***AND*** What are the corresponding compliance times?

*(See attached **"SAMPLE: ProposeError! Bookmark not defined.d Corrective Action"** for an example of how this information should be provided.)*

§ Have you considered all of the aspects of what you are proposing, such as overlapping requirements, the effect these actions will have on other existing requirements, and other sensitive issues? *(Be as specific as possible.)*

[Note to Word users: The area below is formatted as a "Table." It allows you to insert as much information as needed into each cell. To move to the next cell, use the Tab key.]

PROPOSED CORRECTIVE ACTION

You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Applicability
CF34-3A1 and CF34-3B1 LPT stage 5 disk P/N 6078T92P01 and LPT stage 6 disk P/N 6089T89P01 with serial numbers listed in paragraph 4 of Alert Service Bulletin (ASB) CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

LPT Stage 5 and Stage 6 Disk Initial Inspection or Replacement
For 12 months from the effective date of this AD, replace with a serviceable disk or initially inspect applicable CF34-3A1 and CF34-3B1 LPT stage 5 and 6 disks in accordance with paragraphs 3.C.(1) through 3.E.(6) of the Accomplishment Instructions of ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004 and the schedule defined below.

For 12 months from the effective date of this AD, replacement engines or LPT modules may contain applicable CF34-3A1 and CF34-3B1 LPT stage 5 and 6 disks that have been inspected in accordance with paragraphs 3.C.(1) through 3.E.(6) of the Accomplishment Instructions of ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

LPT Stage 5 and Stage 6 Disk Replacement
After 12 months from the effective date of this AD replace with a serviceable disk, in accordance to the schedule defined below, applicable CF34-3A1 and CF34-3B1 LPT stage 5 and 6 disks, which have not been initially inspected to ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

Initial Inspection and Replacement Schedule
1) LPT stage 5 and 6 disks with fewer than 2,500 cycles since new (CSN) on the effective date of this AD at piece part exposure, but no later than 6,500 CSN.
2) LPT stage 5 and 6 disks with greater than or equal to 2,500 CSN and less than 13,000 CSN on the effective date of this AD at piece part exposure, but prior to accumulating an additional

4,000 cycles in service (CIS) since the effective date of this AD, or 14,000 CSN, whichever comes first.

3) LPT stage 5 and 6 disks with greater than or equal to 13,000 CSN and less than 14,250 CSN, on the effective date of this AD at piece part exposure, but prior to accumulating an additional 1,000 CIS since the effective date of this AD.
4) LPT stage 5 and 6 disks with greater than or equal to 14,250 CSN and less than 14,500 CSN, on the effective date of this AD at piece part exposure, but prior to accumulating an additional 750 CIS since the effective date of this AD.
5) LPT stage 5 and 6 disks with greater than or equal to 14,500 CSN and less than 14,750 CSN, on the effective date of this AD at piece part exposure, but prior to accumulating an additional 500 CIS since the effective date of this AD.
6) LPT stage 5 and 6 disks with greater than or equal to 14,750 CSN on the effective date of this AD and which have been fluorescent penetrant inspected (FPI) at a prior piece part exposure, prior to accumulating an additional 500 CIS since the effective date of this AD.
7) LPT stage 5 and 6 disks with greater than or equal to 14,750 CSN on the effective date of this AD and which have not been fluorescent penetrant inspected (FPI) at a prior piece part exposure, prior to accumulating an additional 250 CIS since the effective date of this AD.

LPT Stage 5 and Stage 6 Disk Repetitive Inspection

1) At intervals not to exceed 3100 cycles, repetitively inspect or replace applicable LPT stage 5 and 6 disks, that have been initially inspected in accordance with the instructions in this AD, in accordance with paragraphs 3.C.(1) through 3.E.(6) of the Accomplishment Instructions of ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

LPT Stage 5 and Stage 6 Disk Removal

1) If there is an arc-out found, remove the disk from service.

Definitions

Serviceable Disk

For the purpose of this AD, the definition of a serviceable LPT disk is a disk not listed in Paragraph 4 of ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

Piece part exposure

For the purpose of this AD, the definition of piece part exposure for the Stage 5 LPT disk is when the disk is separated from the forward and aft bolted joints.
For the purpose of this AD, the definition of piece part exposure for the Stage 6 LPT disk is when the disk is separated from the forward bolted joint.

Terminating Action

Replacement of the applicable LPT stage 5 and 6 disks with disks not listed in paragraph 4 of ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004 is terminating action for the inspections.

11b. How was the compliance time(s) established?

Arc-out size distributions from testing, fracture mechanics calculations of crack propagation, along with the LPT disk age distributions were combined in a risk assessment to calculate the compliance times which meet the FAA approved level of risk.

11c. Has the manufacturer issued relevant service information? If so, attach 2 copies. *(Copies must be legible and of very good quality. Originals are preferred.)*

Yes.

Material Incorporated by Reference

GE Alert Service Bulletin CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004.

Related Information

GE Alert Service Bulletin CF34-AL S/B 72-A0178.

11d. If this action relates to a non-U.S. product, has the foreign civil airworthiness authority (FCAA) issued a parallel AD ? If yes, please provide the following information:

FCAA AD Number:

Date of issuance:

11e. Are there any differences between the manufacturer's service information referenced above, other AD's (foreign or U.S.), and the requirements of this AD? (For example, does the compliance time of this AD action differ significantly from that recommended in the referenced service information?) If so, explain these differences and the reasons for each.

11f. Are notes, drawings, or diagrams needed in the AD to explain procedures or differences from the service instructions? *(If so, please explain below or attach a copy.)*

No

12. Number of aircraft/products that will be affected? *(Use numerical figures).*

CF34-3A1/-3B1 683 domestic Engines 290 foreign registered Engines

13. Provide the number of work hours/associated costs per aircraft/product for ***EACH*** proposed corrective action (i.e., inspection, modification, etc.) in the table below.

FOR THE **PROPOSED** AD.

Type of Corrective Action	Number of Workhours per engine	Number of U.S. engines Affected	Parts Costs per Aircraft
To inspect LPT disks to ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004 when LPT module is exposed in shop.	70 hrs.	355	

To inspect LPT disks to ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004 when modules are forced off-wing.	94 hrs.	164
To inspect LPT disks to ASB CF34-AL S/B 72-A0173 Revision 1, dated May 20, 2004 when engines are forced off-wing.	238 hrs	164

Notes:
1) It is estimated that 15 LPT stage 5 disks with electrical arc-out indications will be removed as a result of the AD mandated inspections.
2) Assuming the same infection rate for the LPT stage 6 disks, 15 LPT stage 6 disks with electrical arc-out indications will be removed as a result of the AD mandated inspections.
3) Based on pro-rated life of the LPT stage 5 & 6 disks, the hardware costs are estimated to be $550,000.

FOR THE **EXISTING** AD (i.e., the one to be superseded or revised), **if applicable.**

Type of Corrective Action	Number of Work-hours per Engine	Number of U.S. Aircraft Affected	Parts Costs per Aircraft

14. If parts are **required**, are they available for all aircraft?

Yes.

15. If known, please indicate the number of affected engines that are already in compliance with the proposed inspection, modification, installation, or replacement, etc.

As of April 30, 2004, 30 engines are in compliance with the proposed inspection.

16. Should a special flight permit be:

_X_ Permitted

_____ Permitted with limitations ***(List the limitations on a separate sheet.)***

_____ Prohibited

17. In general, how is the product utilized (i.e., air carrier, general aviation, commuter, military, agri-business, training, etc.)?

Commercial regional jet carrier.

18a. If this proposed AD would revise or supersede an existing AD, have alternative methods of compliance (AMOC) been approved for the existing AD?

N/A

18b. If yes, should those AMOC's continue to be considered approved for all or any portion of the proposed AD?

N/A

18c. If yes, state for what portions of the proposed AD the previously approved AMOC's should continue to be considered approved.

N/A.

19. With whom outside the FAA has this proposal been discussed (i.e., ATA, NBAA, RAA, AOPA, ALPA, GAMA, etc.)? *(A separate record may need to be submitted to the Rules Docket. See paragraph 3, "Ex parte Contacts," of the AD Manual.)*

NOTE: This item should be completed prior to submission of the AD Proposal Worksheet.

Organization	Person Contacted	Date	Reaction
GE	Jeff Legrow	3/19/04	Concurs
GE	Mike Dann	3/19/04	Concurs
GE	Victor Zakak	3/19/04	Concurs
GE	Mike McNulty	3/19/04	Concurs
GE	Gary Galbreith	3/19/04	Concurs
GE	Mike Gorman	3/19/04	Concurs
GE	George Zuefle	3/19/04	Concurs
GE	Norm Leong	3/19/04	Concurs
GE	Craig Stevens	3/19/04	Concurs
ATA	Charlie Bautz	5/5/04	None
RAA	Dave Lotterer	5/5/04	None

20. Are there any special considerations or concerns that need to be taken into account in the drafting of this proposal? *(Use a separate sheet to detail these items, if necessary.)*

No

21. Do you have reason to believe that this action would be considered "sensitive?" *(See Section 15 of the AD Manual for a definition of "sensitive".)* If yes, please explain below.

No.

22. Please indicate **Yes** or **No** to the following questions:

__No__ Is this considered interim action?

__No__ Do you know of any optional or alternative methods of accomplishing the proposed action?

__No__ Have you considered any alternatives to an AD action?

__No__ Are other Directorates involved in any similar actions?

__No__ Does this action affect the Presidential fleet?

__No__ Does this action affect the FAA fleet?

__Yes, AEG__ Have the proposed procedures been verified (i.e., by MIDO, AEG, ACDO, FSDO)?

23. Check the category that best describes **the cause of the unsafe condition** addressed by this AD:

____Design Problem____ Quality Control Problem

____ Operational____ Maintenance____ Unapproved Parts

__X__ Other (specify): Assembly marking procedure was used on the potentially infected population is no longer permitted.

Signature Section

(Signature indicates concurrence with proposed action)
(MIDO signature required if QC problem involved.)

Robert Grant	RRG	6/14/04
Project Engineer		Date
Robert Ganley	RJG	6/15/04
Branch Manager		Date
Robert Guyotte	RJG For	6/15/04
ACO/Staff Office Manager		Date
Kevin McLaughlin	RRG for	6/14/04
AEG Representative		Date
N/A		
MIDO Representative		Date

(MIDO signature required if QC problem involved.)

*Enforcement action status? _____

Supplementary Information

This AD results from a Stage 5 LPT disk low cycle fatigue (LCF) failure during factory testing. This action requires inspections or replacement of certain LPT disks for electrical arc-out indications. Repetitive inspections are also mandated. The actions of this AD are intended to prevent rupture of an LPT disk due to cracks that initiate at an electric arc-out, which could result from in an uncontained failure of the engine.

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Compliance

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